UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/271,614	03/17/1999	ADAM J CHEYER	SRI1P018	4385

22918 7590 05/11/2004

PERKINS COIE LLP
P.O. BOX 2168
MENLO PARK, CA 94026

EXAMINER	
BULLOCK JR, LEWIS ALEXANDER	
ART UNIT	**PAPER NUMBER**
2126	17

DATE MAILED: 05/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/271,614	CHEYER ET AL.	
	Examiner	Art Unit	
	Lewis A. Bullock, Jr.	2126	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 February 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-56* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-56* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 22, 24, 25, 47, 49, 50, and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over "An Open Agent Architecture" by COHEN.

As to claim 22, COHEN teaches a computer architecture for communication and cooperation among distributed agents (client agents / individual agents / interface agent / calendar agent / database agent / telephone agent / mail agent / blackboard server process) comprising: a plurality of service providing agents (client agents that are able to achieve various goals or who have indicated a capability in resolving ICL expressions / subsidiary blackboard server processes, especially BB1); at least one facilitator agent (distributed blackboard server processes, especially BB5) capable of receiving a service requests in the form of a base goal ("The Server is responsible both...for identifying agents that can achieve various goals...") from a service-requesting agent (client agent / server process BB1) in an inter-agent communication language (ICL) and capable of determining sub goals necessary to accomplish the base goal ("The primary job of the Server is to decompose ICL expressions and route them to agents who have indicated a capability in resolving them."), the facilitator operable to allocate each sub-goal to at least one service-providing agent (server process BB9 or any server process under

BB6) capable of accomplishing the sub-goal as determined by the registry (knowledge base / blackboard), the facilitator agent (BB4 / BB5 server processes) being distinct from the service-providing agents (BB6, BB7, BB8, and BB9 server processes) (figure 1); and at least one service-requesting agent (originating agent / distributed blackboard server process BB1) capable of making a request directly to a service-providing agent (target agent / server process BB9) as a peer to peer communication for accomplishment of at least one of the sub-goals (pg. 2, "Also the identity of the responding knowledge source BB9 can be sent back to the originator, so that future queries of the same type from BB1 may be addressed directly to BB9 without passing through the hierarchy of blackboards.") (pg. 2-3, Agent Architecture, Distributed Blackboard Architecture, Operational Agents).

As to claim 47, COHEN teaches a facilitator agent (distributed blackboard server process) for coordinating cooperative task completion within a distributed computing environment comprising: a registry (knowledge base) of capabilities of the service-providing electronic agents (via the knowledge base of a server process) ("The primary job of the Server is to decompose ICL expressions and route them to agents who have indicated a capability in resolving them."); and a facilitating engine (server process functionality) operable to determine a set of sub goals (list of goals) necessary to accomplish the base goal (request sent as a goal with primitives permitting distributed AND and OR parallel solving), and then allocate such sub goals to those agents capable of accomplishing the sub-goals as determined by the registry ("The primary job

of the Server is to decompose ICL expressions and route them to agents who have indicated a capability in resolving them.") (pg. 2-3, Agent Architecture, Distributed Blackboard Architecture, Operational Agents), the facilitating agent (server process BB5) further capable of initiating a direct peer to peer communication between a service-requesting agent (server process BB1) and a service-providing agent (server process (BB9) of at least one sub-goal, and said facilitating agent (server process BB5) being distinct from the service-providing agents (server process BB6, BB7, BB8, and BB9) (pg. 2, "Also the identity of the responding knowledge source BB9 can be sent back to the originator, so that future queries of the same type from BB1 may be addressed directly to BB9 without passing through the hierarchy of blackboards.") (pg. 2-3, Agent Architecture, Distributed Blackboard Architecture, Operational Agents; fig. 1).

As to claim 53, COHEN teaches a computer implemented process for providing coordinated task completion within a distributed computing environment comprising the steps of: providing at least one agent registry (via distributed blackboard server processes) including capabilities of service providing electronic agents (client agents that are able to achieve various goals or who have indicated a capability in resolving ICL expressions) ("The primary job of the Server is to decompose ICL expressions and route them to agents who have indicated a capability in resolving them."); interpreting (solving) a service request in the form of a base goal, the service request being in an ICL ("The primary job of the Server is to decompose ICL expressions and route them to agents who have indicated a capability in resolving them."); determining a plurality of

sub goals (list of goals / request) necessary to accomplish the base goal (via interpreting request with distributed AND and OR parallel solving primitives); selecting from the registry at least one service providing agent capable of completing the sub goals ("The Server is responsible...for identifying agents that can achieve various goals, and for scheduling and maintaining the flow of communication during distributed computation.") ; delegating at least one sub goal as a peer to peer service request directly from a service requesting agent (originating agent / one distributed blackboard server process) to a service providing agent (target agent / another distributed blackboard server process) (pg. 2, "Also the identity of the responding knowledge source BB9 can be sent back to the originator, so that future queries of the same type from BB1 may be addressed directly to BB9 without passing through the hierarchy of blackboards."); and delegating any remaining sub goals as service request in the ICL to the selected agents (client agents / other subsidiary servers) capable of completing the remaining sub goals ("When attempting to solve a goal, an agent may find itself lacking certain necessary information. The agent can either post a request of a specific agent for the information or it may post a general request on the blackboard.") (pg. 2-3, Agent Architecture, Distributed Blackboard Architecture, Operational Agents).

As to claims 24 and 25, COHEN teaches that when a blackboard server process communicates with a senior or responding server process, request and responses are sent (pg. 2, Distributed Blackboard Architecture) and that server agent BB1 is capable of directly communicating with server agent BB9 without passing through the hierarchy

of blackboards. Therefore, it is obvious to one of ordinary skill in the art that since server processes communicate with one another such that request and responses are sent, and BB1 upon receiving a request from client agent communicates with BB9 without going through the hierarchy that communication is bi-directional with a facilitator agent.

As to claims 49 and 50, refer to claims 24 and 25 for rejection.

3. Claims 1-5, 14-21, 26-46, 51, 52, and 54-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over "An Open Agent Architecture" by COHEN in view of KISS (US 6,484,155).

As to claim 1, COHEN teaches a computer architecture for communication and cooperation among distributed electronic agents (client agents / individual agents / interface agent / calendar agent / database agent / telephone agent / mail agent) comprising: a plurality of service-providing agents (client agents that are able to achieve various goals or who have indicated a capability in resolving ICL expressions); a distributed facilitator agent (distributed blackboard server processes) capable of bi-directional communications with the plurality of service-providing agents ("The Server is responsible both for....maintaining the flow of communication during distributed computation.), the facilitator agent including: an agent registry (blackboard / knowledge base) that declares capabilities for each of the service providing agents active within the distributed computing environment ("The primary job of the Server is to decompose ICL

expressions and route them to agents who have indicated a capability in resolving them."); and a facilitating engine (server process functionality) operable to interpret a service request as a base goal, and further operable to coordinate a suitable delegation of sub-goal requests to best complete the requested service request ("The primary job of the Server is to decompose ICL expressions and route them to agents who have indicated a capability in resolving them.") (pg. 2-3, Agent Architecture, Distributed Blackboard Architecture, Operational Agents). COHEN also teaches that the server may be a client in a hierarchy of servers and that the blackboard systems themselves can be structured in a hierarchy distributed over a network (pg. 2, Distributed Blackboard Architecture). Therefore, it would be obvious that each server of the hierarchy is its own process since they can be individually operated and manipulate one another in the same system or over a network. However, COHEN does not explicitly mention that the engine is operable for generating a goal satisfaction plan involving using reasoning to determine sub-goal requests.

KISS teaches an agent architecture for communicating and cooperation among distributed electronic agents (user agents / meta agents / and knowledge agents), wherein a facilitator agent (meta agent) is operable for generating a goal satisfaction plan (dynamic "solution plan") associated with the base goal (query) wherein the goal satisfaction plan involves using reasoning to determine sub-goal requests (sub-plans / tasks) based on non-syntactic decomposition of the base goal and using said reasoning to co-ordinate and schedule efforts by the service-providing electronic agents for fulfilling the sub-goal requests in a cooperative completion of the base goal (col. 5, lines

14-45; col. 8, lines 21 – col. 9, line 26; col. 10, lines 10-38). Therefore, it would be obvious to combine the teachings of COHEN with the teachings of KISS in order to that inference be distributed and cooperative over a distributed environment (col. 3, lines 47 – col. 4, line 17).

As to claim 26, refer to claim 47 for rejection. However, claim 26 further details that the service request is formed according to an Inter-agent Communication Language, that the facilitator agent is a distributed facilitator agent functionally distributed across at least two computer, or the engine operable for generating a goal satisfaction plan that involves using reasoning to determine sub-goal requests based on non-syntactic decomposition of the base goal. COHEN teaches the service request is formed according to an ICL ("The primary job of the Server is to decompose ICL expressions and route them to agents who have indicated a capability in resolving them.") and that the server may be a client in a hierarchy of servers and that the blackboard systems themselves can be structured in a hierarchy distributed over a network (pg. 2, Distributed Blackboard Architecture). Therefore it would be obvious that each server of the hierarchy is its own process since they can be individually operated and manipulate one another in the same system or over a network.

KISS teaches an agent architecture for communicating and cooperation among distributed electronic agents (user agents / meta agents / and knowledge agents), wherein a facilitator agent (meta agent) is operable for generating a goal satisfaction plan (dynamic "solution plan") associated with the base goal (query) wherein the goal

satisfaction plan involves using reasoning to determine sub-goal requests (sub-plans / tasks) based on non-syntactic decomposition of the base goal and using said reasoning to co-ordinate and schedule efforts by the service-providing electronic agents for fulfilling the sub-goal requests in a cooperative completion of the base goal (col. 5, lines 14-45; col. 8, lines 21 – col. 9, line 26; col. 10, lines 10-38). Therefore, it would be obvious to combine the teachings of COHEN with the teachings of KISS in order to that inference be distributed and cooperative over a distributed environment (col. 3, lines 47 – col. 4, line 17).

As to claim 51, refer to claim 53 for rejection. However, claim 51 further details the step of determining and implementing a goal satisfaction plan that involves using reasoning to determine sub-goal requests based on non-syntactic decomposition of the base goal.

KISS teaches an agent architecture for communicating and cooperation among distributed electronic agents (user agents / meta agents / and knowledge agents), wherein a facilitator agent (meta agent) is operable for generating, determining, and implementing a goal satisfaction plan (dynamic "solution plan") associated with the base goal (query) wherein the goal satisfaction plan involves using reasoning to determine sub-goal requests (sub-plans / tasks) based on non-syntactic decomposition of the base goal and using said reasoning to co-ordinate and schedule efforts by the service-providing electronic agents for fulfilling the sub-goal requests in a cooperative completion of the base goal (col. 5, lines 14-45; col. 8, lines 21 – col. 9, line 26; col. 10,

lines 10-38). Therefore, it would be obvious to combine the teachings of COHEN with the teachings of KISS in order to that inference be distributed and cooperative over a distributed environment (col. 3, lines 47 – col. 4, line 17).

As to claims 54, COHEN teaches a computer-implemented method for providing cooperative task completion within a distributed computing environment supporting a dynamically expandable Inter-agent Communication Language (ICL) comprising the steps of: providing a plurality of agent registries (blackboard / knowledge base of server processes) each declaring a set of functional capabilities for one or more of the service-providing electronic agents (client agents that are able to achieve various goals or who have indicated a capability in resolving ICL expressions); receiving a service request adhering to the ICL ("The primary job of the Server is to decompose ICL expressions and route them to agents who have indicated a capability in resolving them."); and determining one or more sub-goal requests (list of goals) in order to perform the service request (via distributed AND and OR-parallel solving primitives) (pg. 2-3, Agent Architecture, Distributed Blackboard Architecture, Operational Agents). It would be obvious that since the server processes are stored in a hierarchy and if an initial server process has no capable client agent that subsequent senior server process blackboards are checked which maintain the knowledge base of all its subsidiaries, that the blackboards are synchronized. It would also be obvious each server of the hierarchy is its own process since they can be individually operated and manipulate one another in

the same system or over a network. However, COHEN does not the determining and implementing a goal satisfaction plan that involves using reasoning to determine sub-goal requests based on non-syntactic decomposition of the base goal.

KISS teaches an agent architecture for communicating and cooperation among distributed electronic agents (user agents / meta agents / and knowledge agents), wherein a facilitator agent (meta agent) is operable for generating, determining, and implementing a goal satisfaction plan (dynamic "solution plan") associated with the base goal (query) wherein the goal satisfaction plan involves using reasoning to determine sub-goal requests (sub-plans / tasks) based on non-syntactic decomposition of the base goal and using said reasoning to co-ordinate and schedule efforts by the service-providing electronic agents for fulfilling the sub-goal requests in a cooperative completion of the base goal (col. 5, lines 14-45; col. 8, lines 21 – col. 9, line 26; col. 10, lines 10-38). Therefore, it would be obvious to combine the teachings of COHEN with the teachings of KISS in order to that inference be distributed and cooperative over a distributed environment (col. 3, lines 47 – col. 4, line 17).

As to claims 2-4, COHEN teaches that the distributed facilitator agent (distributed blackboard server process) includes a plurality of facilitator agents (server processes) being bi-directionally coupled with one another (hierarchy structured) and operable upon separate computer systems ("...blackboard systems themselves can be structured in a hierarchy which could be distributed over a network.") (pg. 2-3, Agent Architecture, Distributed Blackboard Architecture, Operational Agents). COHEN also teaches that

server processes decompose ICL expressions and route them to agents who have indicated a capability in resolving them wherein the each server process in the hierarchy has knowledge of whether its client agents can solve a particular goal. It would be obvious that each server of the hierarchy is its own process since they can be individually operated and manipulate one another in the same system or over a network.

As to claims 5, COHEN teaches the computer architecture operates as an inter-agent communication language enabling agents to perform queries of other agents, exchange information with other agents, set triggers within other agents, allowing ICL supporting compound goal expressions within a single request (pg. 2, Agent Architecture / pg. 3-4, Communication Language).

As to claims 14-19, COHEN teaches the distributed facilitator agent is formed in a hierarchical topology including a top level facilitator agent (senior server process) and at least one other facilitator agent (subsidiary) registered within the top level facilitator agent wherein the facilitator agents execute on different computer systems (pg. 2, Distributed Blackboard Architecture). It would be obvious that since the server processes are distributed across a network and each store the capabilities of client agents that the client agents of a server process are those agents local to the server process, thus specific to that server process.

As to claims 36-44, refer to claims 2-4, and 14-19 above.

As to claim 55, COHEN teaches the distributed facilitator agent is formed in a hierarchical topology including a top level facilitator agent (senior server process) and at least one other facilitator agent (subsidiary) registered within the top level facilitator agent wherein the facilitator agents execute on different computer systems (pg. 2, Distributed Blackboard Architecture). It would be obvious that since the server processes are distributed across a network and each store the capabilities of client agents or subsidiary server processes, that the server processes are separate and are replicated from the subsidiary server process to the senior server process.

As to claims 20 and 21, KISS teaches a plurality of facilitator agents (meta agents) wherein each has a planning component (planning capability) executing within a first computer process and an execution component (execution of the solution plan) executing within a second computer process ("The meta agent is configured to begin executing the solution plan even before the plan is complete...") (col. 5, lines 32-46).

As to claims 27-35, COHEN teaches that the registry of the agent (server's knowledge base) includes data and task declarations, triggers, and characteristics of agents (capabilities) (pg. 2, "The Server is responsible....with the blackboard acting as a broker."; Individual agents can respond..."when mail arrives..."). It would be obvious

that it stores the name of the agent and its address since it must know which agent to invoke.

KISS teaches the facilitating engine is capable of modifying the goal satisfaction plan during execution, the modifying initiated by events such as new agents, decisions, information retrieved (col. 5, lines 32-64).

As to claims 45 and 46, refer to claims 20 and 21 for rejection.

As to claim 52, KISS teaches interpreting a service request is controlled by a computer process (execution of the plan) separate from the agent registry computer (planning capability) reside ("The meta agent is configured to begin executing the solution plan even before the plan is complete...") (col. 5, lines 32-64)

As to claim 56, KISS teaches the act of implementing the delegation plan is controlled by a computer process separate from the computer processes wherein the plurality of synchronized agent registries (planning capability) reside ("The meta agent is configured to begin executing the solution plan even before the plan is complete...") (col. 5, lines 32-64).

4. Claims 6-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over COHEN in view of KISS as applied to claim 1 above, and further in view of "Development Tools for the Open Agent Architecture" by MARTIN.

As to claims 6-13, COHEN and KISS substantially disclose the invention. However, neither reference teach the ICL limitations. MARTIN teaches the ICL is computer platform independent, independent of the agents computer programming language ("...the interface language shared by all agents, no matter what machine they are running on or what computer language they are programmed in."), supports task completion constraints (triggers), supports response time constraints (via triggers / control strategies), supports advisory suggestions (control strategies), and defines capabilities or solvable in ICL (pg. 5, The Open Agent Architecture / The Inter-agent Communication Language). Therefore, it would be obvious to combine the teachings of COHEN with the teachings of KISS and MARTIN in order to facilitate unification and backtracking during interactions among agents (pg. 5, The Inter-agent Communication Language).

5. Claims 23 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over COHEN in view of BUCKLE (US 6,049,819).

As to claim 23, COHEN substantially discloses the invention. However, COHEN does not teach the peer to peer communication is in a language other than an inter-agent communication language.

BUCKLE teaches establishing peer to peer communication between agents by using a facilitator agent (broker agent) wherein the communication is in a language other than an inter-agent communication language (IDL) (col. 18, line 33 – col. 19, line 48; col. 4, lines 52-67; col. 5, line 50 – col. 6, line 14). Therefore, it would be obvious to

combine the teachings of COHEN with the teachings of BUCKLE in order to facilitate an environment enabling agent communication over a wide variety of physical resources (col. 3, lines 19-30).

As to claim 48, refer to claim 23 for rejection.

Response to Arguments

6. Applicant's arguments filed 2/23/04 have been fully considered but they are not persuasive.

Applicant argues that forming the "dynamic solution plan" in KISS is irrelevant to the method of forming the goal satisfaction plan in Applicant's Claim 1 because KISS is an invention involving accessing knowledge repositories wherein such repositories are represented by "knowledge agents". Applicant further details that Kiss is merely a method of information retrieval form information repositories or data sources wherein contrast, the goal satisfaction plan of claim 1 involves asking service providing agents to perform actions such as boil water, roast coffee beans, grind the roasted coffee beans as opposed to merely asking the agents to retrieve information from an information repository. The examiner disagrees. First, the Examiner cannot find any language within the claims that detail asking the service-providing agents to perform actions, such as boil water, roast coffee beans, grind the roasted coffee beans. The claims at best teach the facilitating engine of the facilitator agent using reasoning to determine sub-goal requests and using the reasoning to co-ordinate and schedule efforts by the

service-providing electronic agents for fulfilling the sub-goal requests in a cooperative completion of the base goal. The claims make no mention as to what those sub-goal requests are. Therefore, the sub-goal request can be any type of request, i.e. command request or information retrieval request. Secondly, Kiss teaches that the knowledge agents publish to the agent service layer the capabilities, interests, and attributes of the knowledge agent's associated knowledge module (col. 6, lines 46-51) wherein a knowledge module can not only conceivably be a knowledge base, but also a computational resource, e.g. algorithm or software processing routines (col. 6, lines 55-60). Kiss teaches that meta-agents are responsible for formulating a dynamic "solution plan" in order to dynamically bring available knowledge resources together as and when needed to provide a response to an inquiry and allocates tasks to the knowledge agent layer in furtherance of the solution plan (col. 5, line 14-45). Hence, Kiss teaches forming a goal satisfaction plan (dynamic solution plan) associated with a base goal (inquiry) by using reasoning (knowledge of problem solving methodologies and distributed inferencing procedures / knowledge of how to bring available knowledge resources together) to determine sub-goal requests (tasks) and using the reasoning to co-ordinate and schedule efforts by service-providing agents (knowledge agents which control knowledge modules) for fulfilling the sub-goal requests. Therefore, Kiss adequately teaches the limitation of the claims regarding the goal satisfaction plan and the Examiner maintains the rejection as disclosed above.

Applicant then states that Kiss is further irrelevant and completely different from the method of claim 1 because the meta agent is configured to begin executing the

solution plan even before the plan is complete, thereby performing information retrieval instead of intelligent actions such as roast coffee beans. Applicant states that in Kiss, it is not fatal to begin executing the solution plan even before the plan is complete because no real harm is done if the meta agent begins by asking the wrong questions, however, the facilitator of claim 1 cannot begin execution of the goal satisfaction plan before the goal satisfaction plan is complete. For example, it would be fatal for the facilitator to ask a service-providing agent to boil the coffee beans instead of requesting that the coffee beans be first roasted and then ground. Such an action of boiling the coffee beans would be irreversible and would produce soggy beans. In other words the service-providing agents of Claim 1 perform actions and are not merely sources of information. The examiner disagrees. First, the examiner cannot find any limitation within the claims that disclose that the plan has to be fully developed before being implemented or that the sub-requests are not information retrieval requests. It seems that Applicant is arguing limitations that are not disclosed in the claim language. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., that the goal satisfaction plan has to be fully developed before being implemented or that the sub-requests are not information retrieval requests) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). The examiner refers to the response above in showing

that the cited combination teach the claim limitations as disclosed and therefore maintains the rejection as disclosed.

Applicant then argues that Kiss does not use reasoning for "formulating the dynamic solution plan." In fact Kiss teaches away from using reasoning or inferencing for generating the solution plan as detailed at column 8, lines 58-61. Claim 1 details the facilitating engine using sophisticated reasoning when delegating sub-goal requests to best complete the requested service request which is not taught by Kiss. The examiner disagrees. Kiss teaches that the knowledge agents publish to the agent service layer the capabilities, interests, and attributes of the knowledge agent's associated knowledge module (col. 6, lines 46-51) wherein a knowledge module can not only conceivably be a knowledge base, but also a computational resource, e.g. algorithm or software processing routines (col. 6, lines 55-60). Kiss teaches that meta-agents are responsible for formulating a dynamic "solution plan" in order to dynamically bring available knowledge resources together as and when needed to provide a response to an inquiry and allocates tasks to the knowledge agent layer in furtherance of the solution plan (col. 5, line 14-45). Hence, Kiss teaches forming a goal satisfaction plan (dynamic solution plan) associated with a base goal (inquiry) by using reasoning (knowledge of problem solving methodologies and distributed inferencing procedures / knowledge of how to bring available knowledge resources together) to determine sub-goal requests (tasks) and using the reasoning to co-ordinate and schedule efforts by service-providing agents (knowledge agents which control knowledge modules) for fulfilling the sub-goal requests. Applicant points to column 8, lines 58-61 as to evidence

that Kiss's use of reasoning is not similar to Applicant's sophisticated reasoning when delegating sub-goal requests to best complete the requested service. However, upon reviewing the claims, the Examiner cannot find any limitation that accurately portrays how the reasoning is performed or any other limitation to ascertain how the reasoning in claims is different than from what is disclosed in Kiss. The claims detail the goal satisfaction plan involves using reasoning to determine sub-goal requests based on non-syntactic decomposition of the base goal, hence the sub-goal requests are not based on how the goal was syntactically received or made. Kiss teaches the meta agent dynamically assesses the problem and its solution states, divides the problem, and assigns the appropriate knowledge agents to work on the solution based on their registered capability that is relevant to the solution states of the problem (col. 8, lines 32-48). Therefore, the request is not divided based on its syntax, but how to solve the overall problem. Therefore, the combination adequately meets the limitations of the claim as disclosed.

Applicant state that claims 2-21, 26-46, 51, 52, and 54-56 either teaches directly or indirectly similar features as argued regarding claim 1 and are allowable for at least those reasons. Therefore, since the teachings of Cohen and Kiss adequately meet all the limitations of claim 1 as disclosed above, the examiner believes that Cohen and Kiss teaches the limitations of claims 2-21, 26-46, 51, 52, and 54-56 and maintains the rejections as detailed above based upon the arguments provided.

Applicant argues that the facilitator agent is distinct from the service providing agents and that all the blackboard server agents in Cohen are not service-providing

agents. The service-providing agents in Cohen are the client agents as described in column 1, page 2, lines 1-5, where it is clearly stated that "the Open Agent Architecture is a blackboard-based framework allowing individual software client agents to communicate by means of goals posted on a blackboard controlled by the server process." Thus, the blackboard server is equivalent to the facilitator in claim 1 and the client agent is equivalent to the service-providing agent in claim 1. The examiner disagrees. First the examiner makes reference to page 2, column 1, lines 7-11 and lines 15-18 which detail that the server is responsible for storing data that is global to the agents, identifying agents that can achieve various goals, decompose ICL expressions and route them to agents who have indicated a capability in resolving them. On page 2, column 2, under the Distributed Blackboard Architecture text, is a description of how a goal is received at an initial blackboard and posted to a senior blackboard, that is distinct from the initial blackboard, which delegates the goal to subsequent blackboards, that are distinct from the previous blackboards. Upon identifying the correct blackboard that handles the goal type, the initial blackboard receives the identity of that blackboard such that future queries are addressed directly to that blackboard without passing through the hierarchy of blackboards. Applicant claims make no mention as to what is considered a service-requesting agent or what is considered a service-providing agent. Therefore, an agent that either initiates a request or initially handles the request but delegates it to one of its subordinates is considered a service-requesting agent, while an agent that handles a request or has a subordinate agent handle the request for it is a service-providing agent. Applicant claims detail a

plurality of service providing agents; at least one facilitator; operable to allocate a sub-goal to at least one service-providing agent from a service-requesting agent and at least one service-requesting agent capable of making a request directly to a service-providing agent as a peer to peer communication for accomplishment of at least one of the sub-goals. Cohen's teaching of an initial blackboard sending a goal request to a distinct hierarchy blackboard to be propagated to the correct distinct destination blackboard that is capable of handling the goal type and sending the identity of the destination blackboard back to the initial blackboard for direct future communications of the same goal type accomplishes the claims in their broadest possible interpretation as proper under M.P.E.P. 2111. In addition, Applicant's dependent claim 25 is directed away from what Applicant is arguing. Claim 25 details that the agent that makes the peer-to-peer service request is the facilitator agent that based upon Applicant's interpretation is a blackboard server agent. Therefore, the peer-to-peer service request is conceivably between facilitators as argued by the Examiner. Therefore, the examiner believes the claims are met by the teachings of Cohen and maintains the rejection above.

Applicant argues that the peer-to-peer communication is between facilitators and not between service-providing agents. The examiner disagrees and refers to the arguments above wherein the showing that a facilitator is a service-providing agent in that it is the agent that handles the goal type requested. Secondly the claims do not detail that the peer-to-peer communication is between service-providing agents but between a service-requesting agent and a service-providing agent. Cohen teaches passing queries of the same type from a service-requesting agent, agent that initiates

the passing of the query, to a service-providing agent, agent that handles the query. Therefore, the examiner believes that the claims are met by the teaching of Cohen and maintains the rejection above.

Applicant argues that Cohen does not disclose, teach, suggest or make obvious the novel feature, "the facilitator agent being distinct from service-providing agents, and at least one service-requesting agent capable of making a request directly to a service-providing agent as a peer to peer communication for accomplishment of at least one of the sub-goals. The examiner disagrees and refers to the arguments made above in showing that the all of the cited agents are blackboard server agents that allow for two such agents to directly communicate without passing through the hierarchy of blackboards. Therefore, the examiner believes that the claims are met by the teaching of Cohen and maintains the rejection above.

Applicant states that claims 23-25, 47-50, and 53 either teach directly or indirectly similar features as argued in claim 22 and are allowable for at least those reasons. Therefore, since the teachings of Cohen adequately meet all the limitations of claim 22 as disclosed above, the examiner believes that Cohen teaches the limitations of claims 23-25, 47-50, and 53 and maintains the rejections as detailed above based upon the arguments provided.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lewis A. Bullock, Jr. whose telephone number is (703) 305-0439. The examiner can normally be reached on Monday-Friday, 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng An can be reached on (703) 305-9678. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

lab